Neutrino hardware group

After summer update

02/09/2026



I’m in Shanghai

- Hi, I’m not there, so I hope you manage to understand the presentation without much problem.

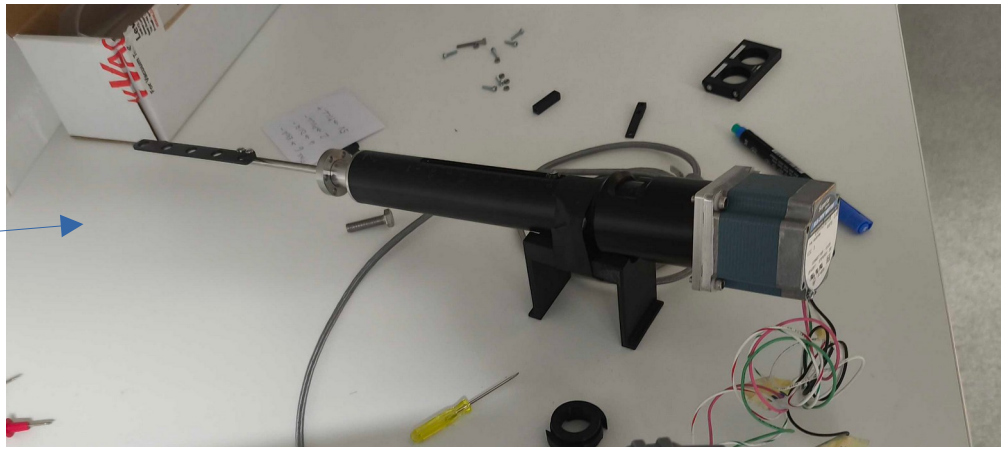


Oi mate, that's a fucking shite question. I might have to chin you for that.

Monochromator

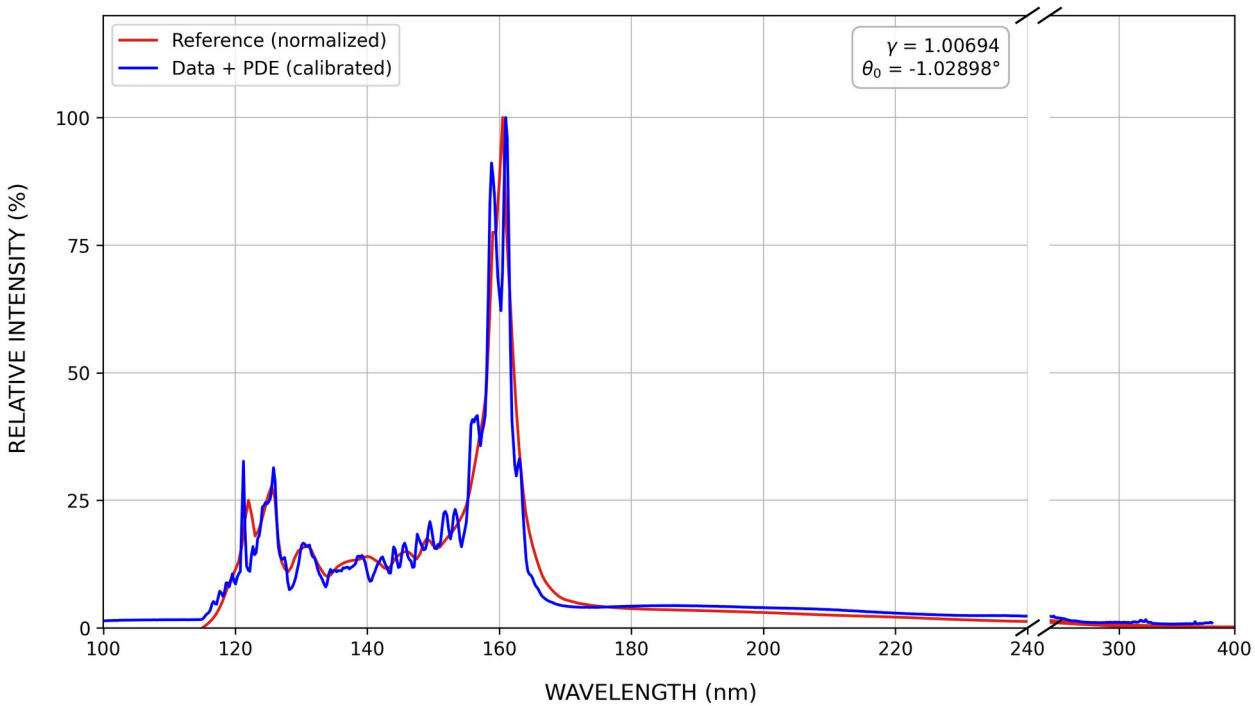
- Monochromator was successfully brought to vacuum and extensively tested by Léa and Mathias with deuterium lamp (see next slides). Details here.
- Most of the pieces for the testing chamber have already arrive, and assembly has started. Only one piece missing to have the set-up complete (should arrive this week).
- Mathias has progressed significantly programming the linear actuator. Sample-holder design ready to send to the workshop (please Mathias confirm).





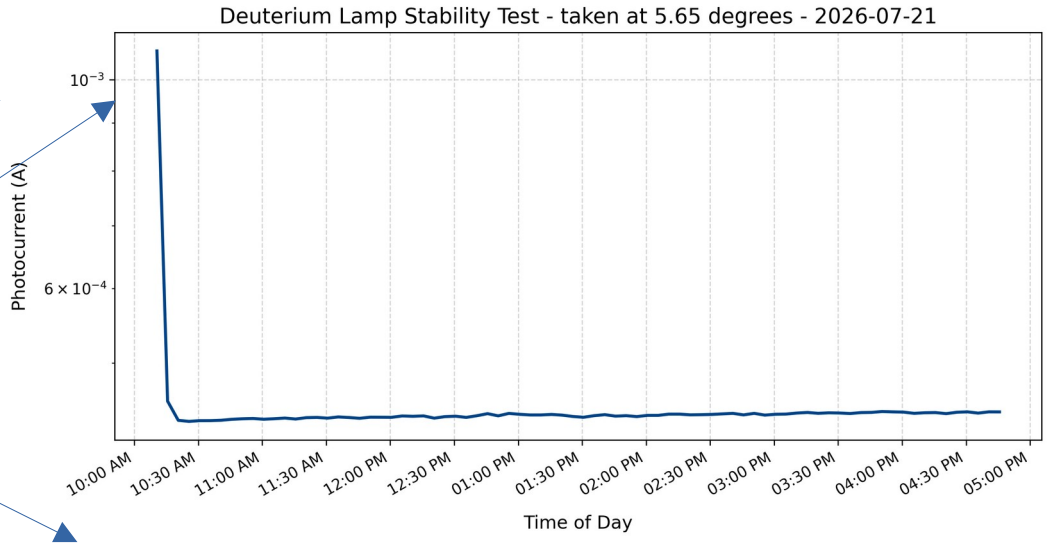
Monochromator calibration

- Lamp spectrum used for calibration (Mathias has the equation).
- Different methods tested, uncertainty at 128 nm ~ 0.3 nm. We are fine.

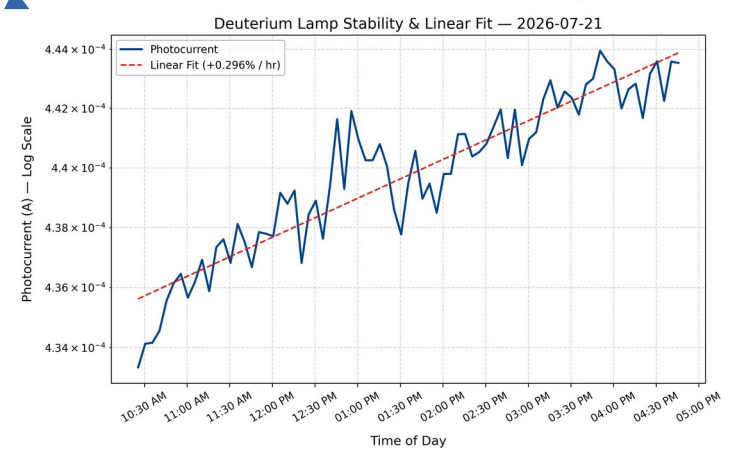


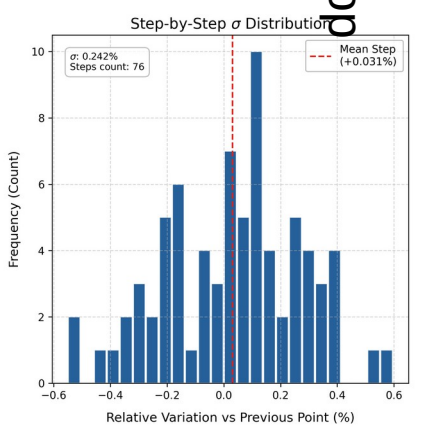
Lamp stability

- We studied monochromator stability as a function of time.
- Lamp needs few minutes to stabilize.
- If we ignore stabilization, then we observed a point-to-point variation of 0.03% on average → very stable!!



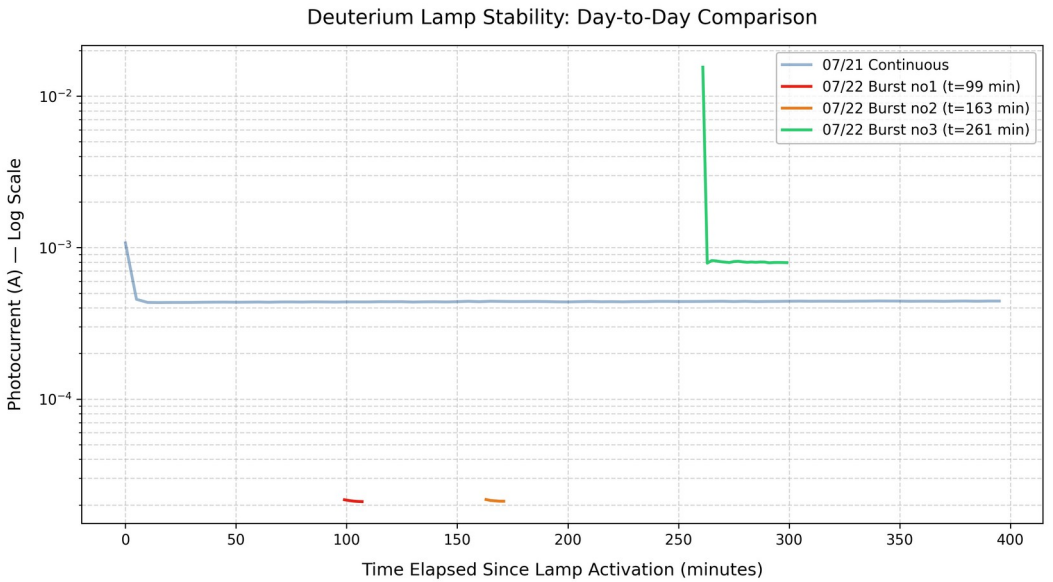
Ignoring initial drop





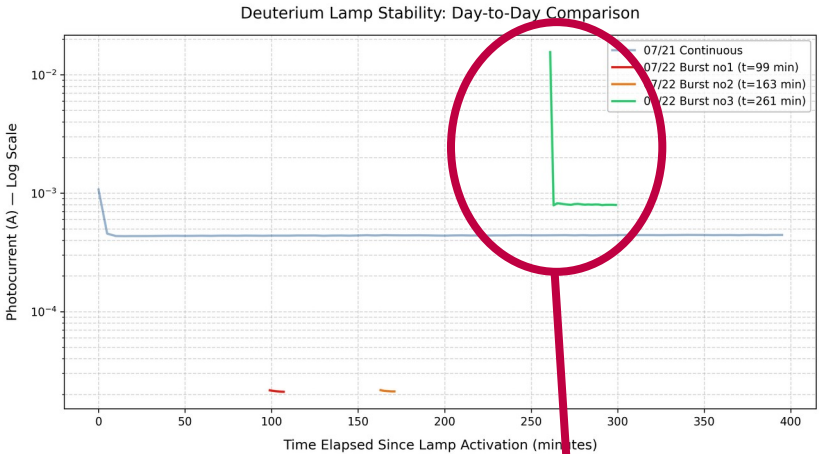
Lamp stability

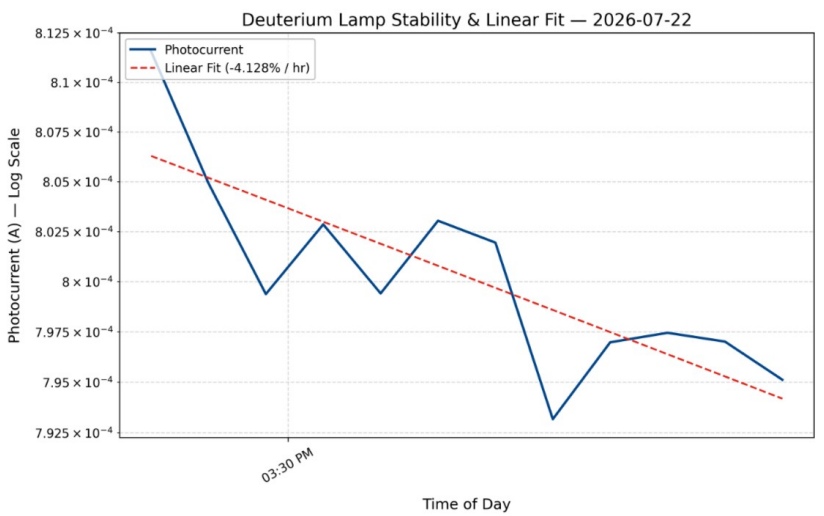
- Days later, while we were measuring other things, we included other short runs to check consistency (red, orange and green).
- The different absolute value is due to a different slit aperture.
- The important thing to notice is that there is also some stabilization due to the SiPM being turned on (so both things need to be considered when operating the system).

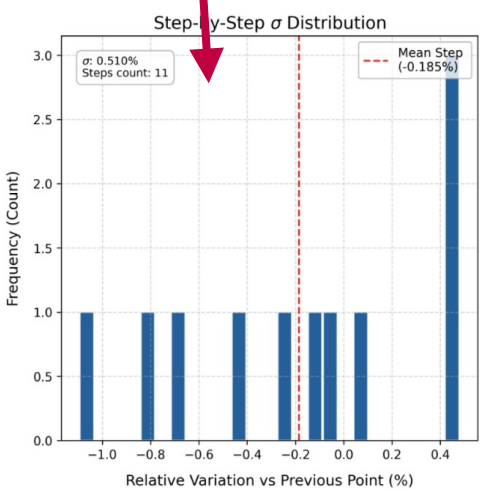


Lamp stability

- Green measurement shows slightly worst stability, but still better than 1%. Reason to be understood.

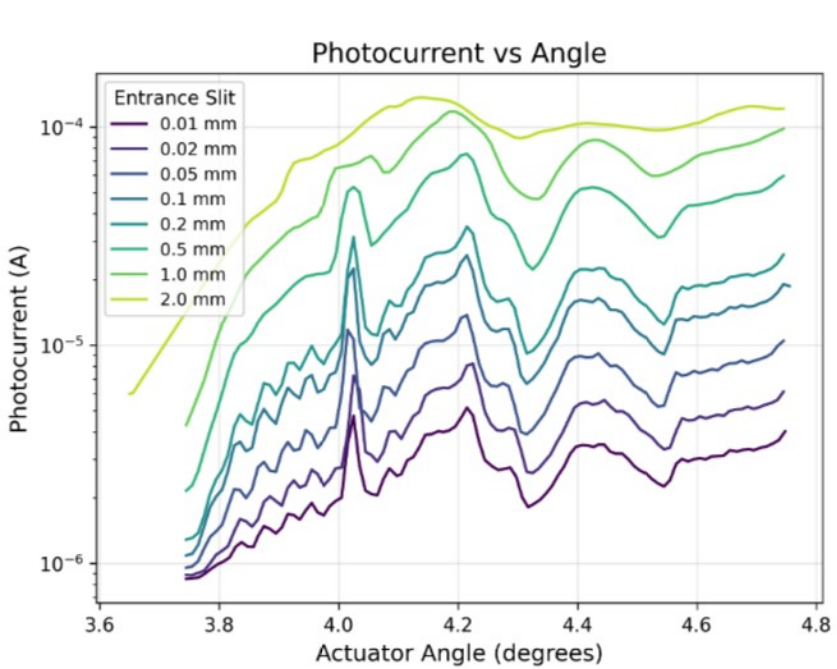


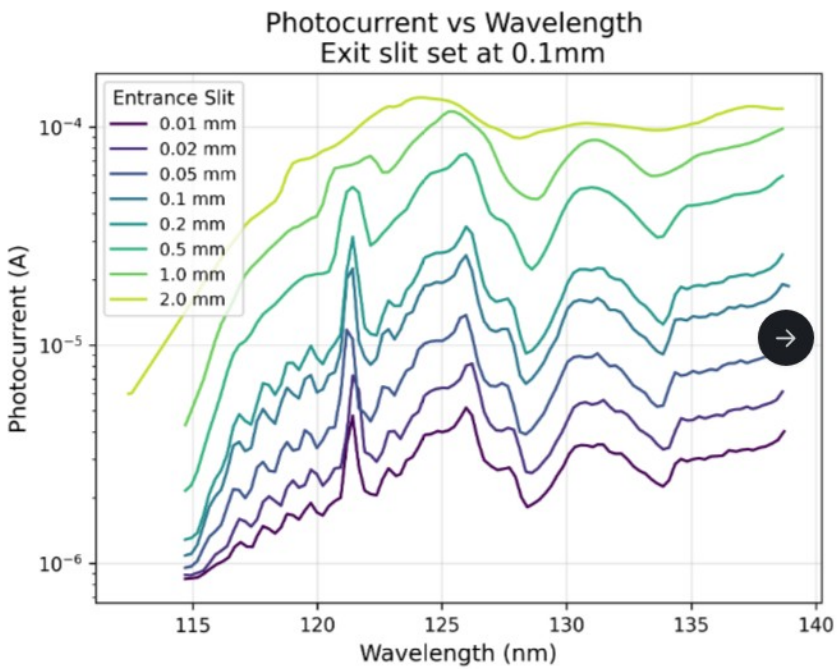




Monochromator wavelength resolution

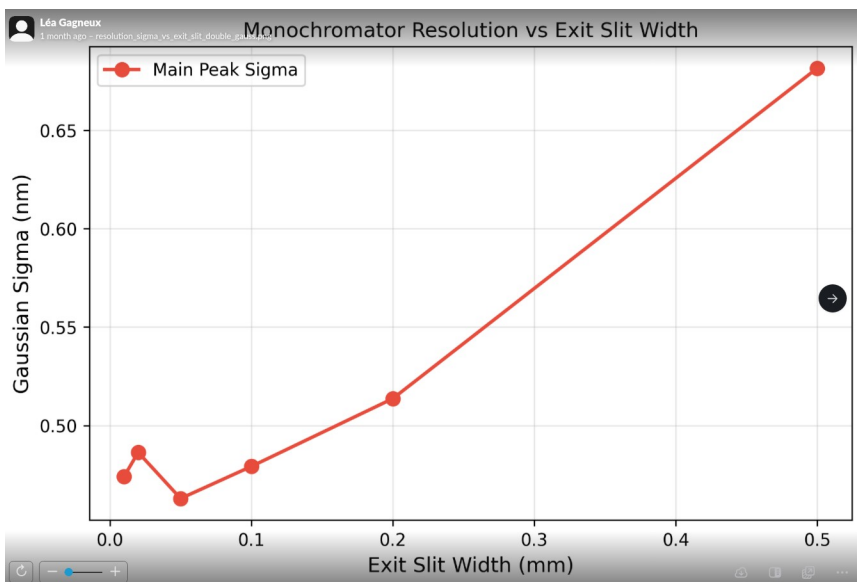
- Region of the lamp used to understand wavelength resolution as a function of slits aperture.

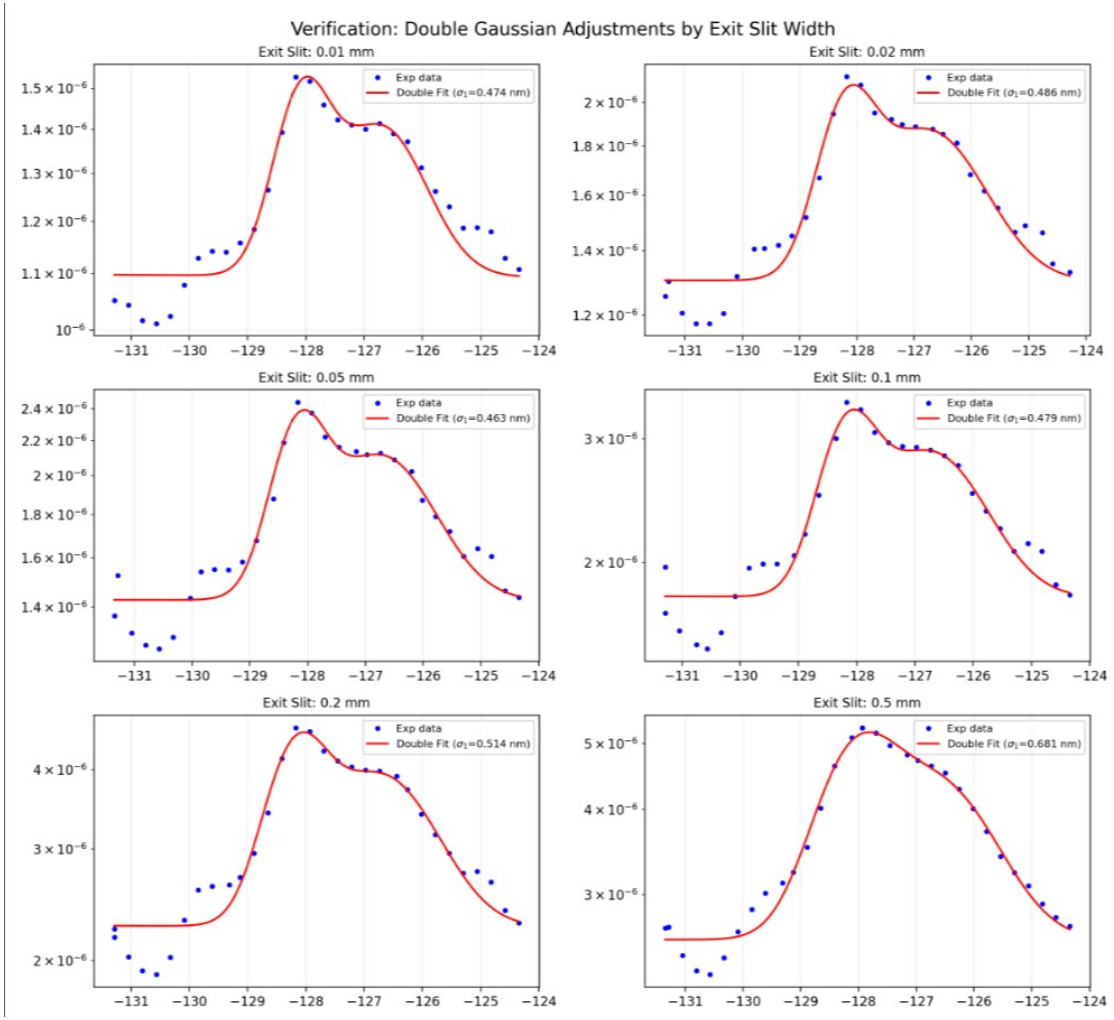




Monochromator wavelength resolution

- **Conclusion: as long as we don’t go above 1 mm, we are fine (better resolution than 1 nm).**



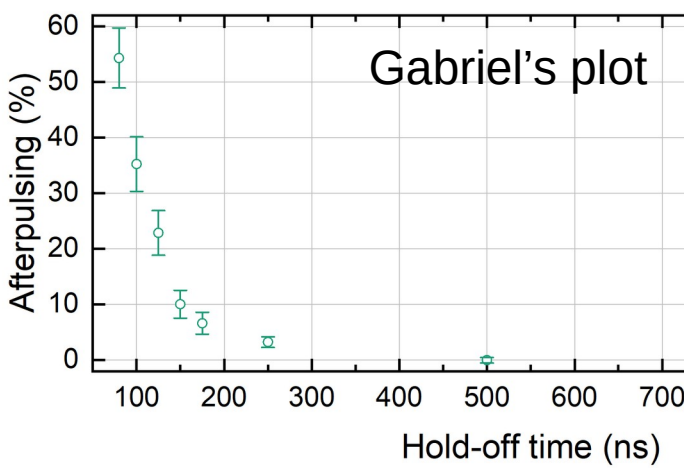


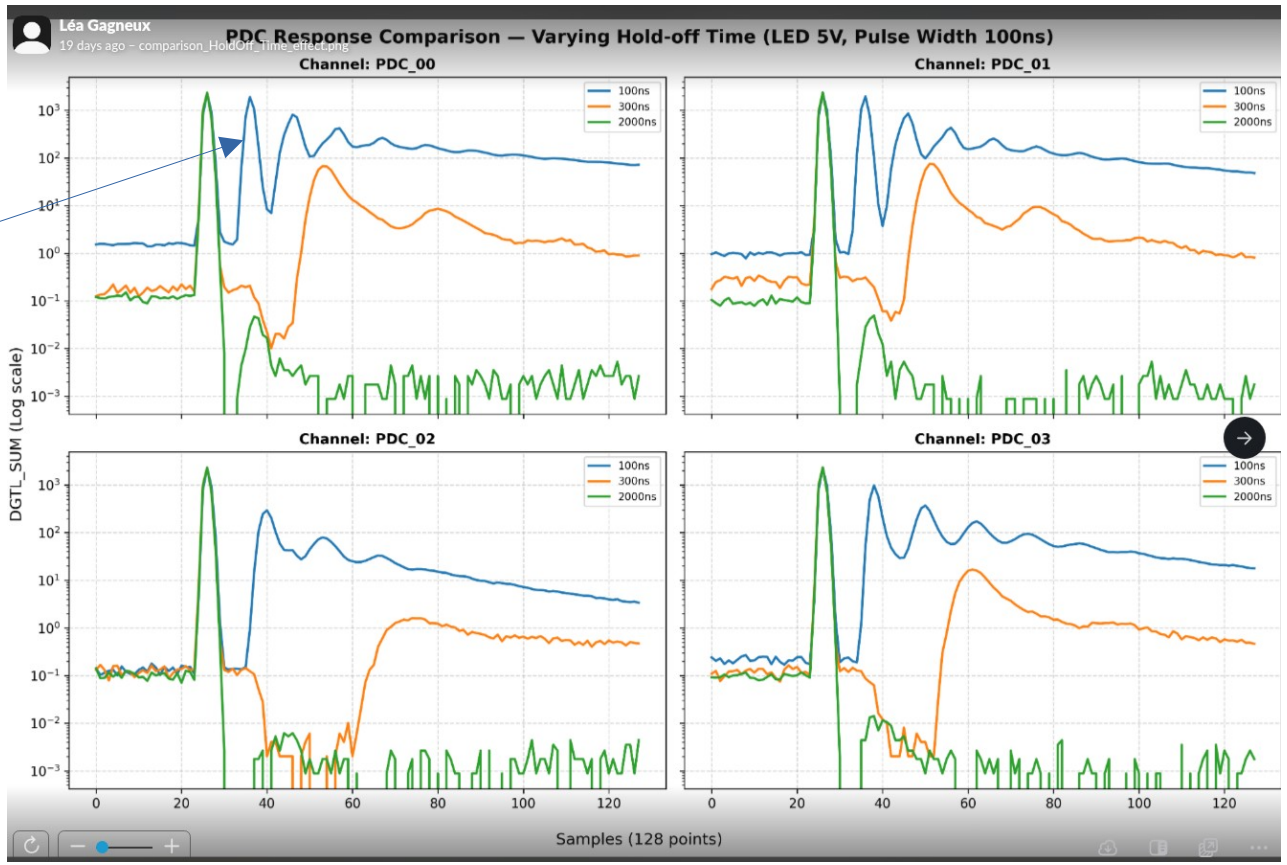
Monochromator

- **We are, after more than one year, almost ready to go.**
- When the system is ready we need to make of it a paper factory:
  - Graphene transparency (top priority), things on its way, Mathias can give details.
  - Metalenses.
  - TPB (yes, TPB project is not dead).
  - Other ideas?

PDCs

- 3D PDCs received and tested by Léa and me (they work fine).
- **Significant after pulsing** (need large hold-off time).
- We need to think of applications (papers).





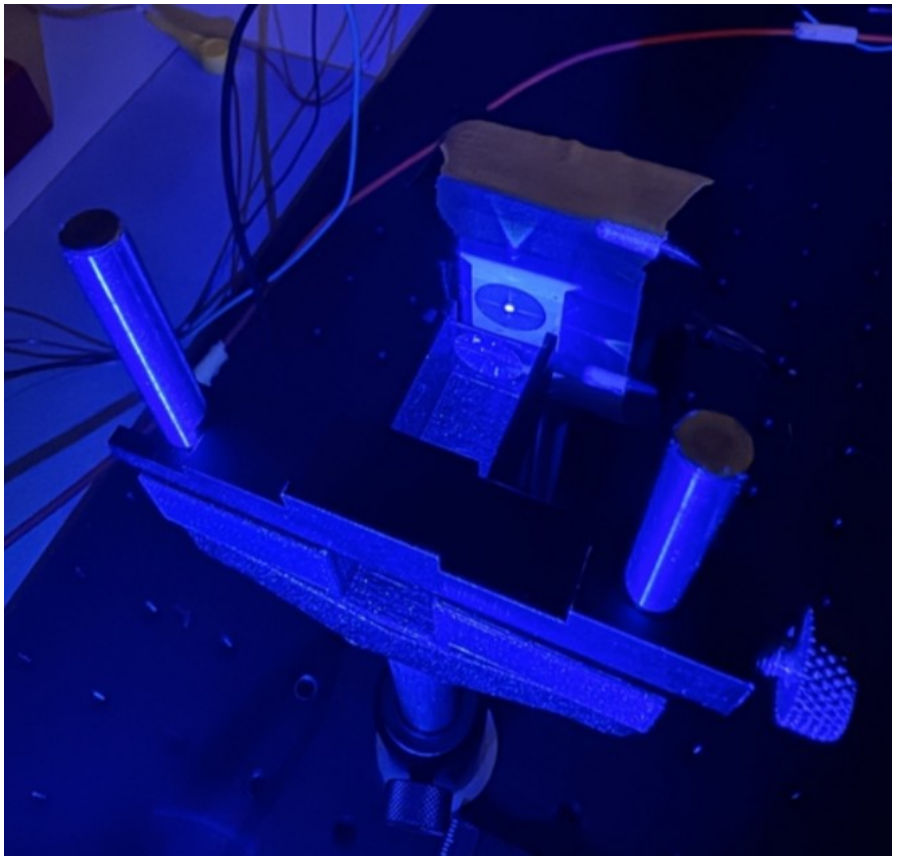
Alpha project

- Set-up ready.
- Trying to coordinate with Anyssa, but my visa issues have been in the way.
- I’ve been too lazy and I haven’t tested anything, but I should ASAP.



CRAB

- Léa and Ian did some stuff with CRAB, but I don’t really know what they did. I have pictures.
- Blue metalense was used.
- The important photon-camera-amplifier-thingy was connected and worked fine.
- I don’t know the details (Brais?).



Other topics

- Nice progress with the flash lamp (see Mathias' talk).
- We need to schedule the visit to GRE.
- Peter Fischer's digital SiPMs should be ready soon.
- We need to decide on what Mphys projects to propose (careful, this year projects are 1-year long and students do not have as much time to do it!).
  Discussing with Brais we thought about having one for the monochromator, another one for the alpha capture, and maybe another one for the PDCs.
- Any other topics?